3. (Original) A sorbent composition in accordance with claim 2 wherein said reduced-valence noble metal is present in the range of from about 0.01 to about 25 weight percent.

4. (Original) A sorbent composition in accordance with claim 3 wherein said zinc oxide is present in the range of from about 10 to about 90 weight percent.

5. (Original) A sorbent composition in accordance with claim 4 wherein said carrier comprises an inorganic carrier.

6. (Original) A sorbent composition in accordance with claim 5 wherein said inorganic carrier is selected from the group consisting of silica, silica gel, alumina, diatomaceous earth, expanded perlite, kieselguhr, silica-alumina, titania, zirconia, zinc aluminate, zinc titanate, zinc silicate, magnesium aluminate, magnesium titanate, synthetic zeolites, natural zeolites, and combinations of two or more thereof.

7. (Original) A sorbent composition in accordance with claim 6 wherein said inorganic carrier comprises a silica compound and an alumina compound.

8. (Original) A sorbent composition in accordance with claim 7 wherein said silica compound is present in an

amount in the range of from about 5 to about 85 weight percent and wherein said alumina compound is present in an amount in the range of from about 1 to about 30 weight percent.

9. (Original) A sorbent composition in accordance with claim 8 wherein said reduced-valence noble metal is selected from the group consisting of platinum, palladium, rhodium, ruthenium, osminium, iridium, and combinations thereof.

10. (Original) A sorbent composition in accordance with claim 1 wherein said reduced-valence noble metal has a valence of less than 2.

11. (Original) A sorbent composition in accordance with claim 10 wherein said reduced-valence noble metal is present in an amount in the range of from about 0.1 to about 10 weight percent and wherein said zinc oxide is present in an amount in the range of from about 15 to about 80 weight percent.

12. (Original) A sorbent composition in accordance with claim 11 wherein said carrier comprises a silica compound and an alumina compound.

13. (Original) A sorbent composition in accordance with claim 12 wherein said alumina compound is present in an amount in the range of from about 5 to about 20 weight percent and wherein said silica compound is present in an amount in the range of from about 10 percent to about 60 weight percent.

14. (Original) A sorbent composition in accordance with claim 1 wherein said reduced-valence noble metal has a valence of zero.

15. (Original) A sorbent composition in accordance with claim 14 wherein said reduced-valence noble metal comprises platinum.

16. (Original) A sorbent composition in accordance with claim 1 wherein said sorbent composition is a particulate in the form of a microsphere having a mean particle size in the range of from about 1 micrometer to about 500 micrometers.

17. Canceled.

18. Canceled.

19. Canceled.

20. Canceled.

21. Canceled.

22. Canceled.

23. Canceled.

24. Canceled.

25. Canceled.

26. Canceled.

27. Canceled.

28. Canceled.

29. Canceled.

30. Canceled.

31. Canceled.

32. (Amended) A composition prepared by the process comprising the steps of:

(a) admixing zinc oxide and a carrier to provide a support mix;

(b) particulating the support mix to provide a support particulate;

(c) incorporating said support particulate with a noble metal to provide a promoted particulate comprising an unreduced noble metal; and

(d) reducing said promoted particulate to provide a reduced sorbent composition comprising a reduced-valence noble metal.

33. (Amended) A composition prepared by the process comprising the steps of:

(a) admixing zinc oxide and a carrier to provide a support mix;

(b) particulating the support mix to provide a support particulate;

(c) incorporating said support particulate with a noble metal to provide a promoted particulate comprising an unreduced noble metal; and

(d) reducing said promoted particulate to provide a reduced sorbent composition comprising a reduced-valence noble metal;

wherein said reduced-valence noble metal has a valence of zero.

34. (Original) A process for removing sulfur from a hydrocarbon-containing fluid stream, said process comprising the steps of:

(a) contacting said hydrocarbon-containing fluid stream with a sorbent composition comprising a reduced-valence noble metal and a support in a desulfurization zone

under conditions such that there is formed a desulfurized fluid stream and a sulfurized sorbent;

(b) separating said desulfurized fluid stream from said sulfurized sorbent;

(c) regenerating at least a portion of the separated sulfurized sorbent in a regeneration zone so as to remove at least a portion of the sulfur therefrom and provide a desulfurized sorbent;

(d) reducing said desulfurized sorbent in an activation zone to provide a reduced sorbent composition which will affect the removal of sulfur from said hydrocarbon-containing fluid stream when contacted with the same; and

(e) returning at least a portion of said reduced sorbent composition to said desulfurization zone.

35. (Original) A process in accordance with claim 34 wherein said support comprises zinc oxide, alumina, and silica.

36. (Original) A process in accordance with claim 35 wherein said sorbent composition comprises said reduced-valence noble metal in an amount in the range of from about 0.01 to about 25 weight percent, said zinc oxide in an amount in

the range of from about 10 to about 90 weight percent, said alumina in an amount in the range of from about 1 to about 30 weight percent, and said silica in an amount in the range of from about 5 to about 85 weight percent.

37. (Original) A process in accordance with claim 36 wherein said reduced-valence noble metal component comprises platinum.

38. (Original) A process in accordance with claim 34 wherein said contacting is carried out at a temperature in the range of from about 100°F to about 1000°F and a pressure in the range of from about 15 to about 1500 psia.

39. (Original) A process in accordance with claim 34 wherein said regeneration is carried out at a temperature in the range of from about 100°F to about 1500°F and a pressure in the range of from about 25 to about 500 psia.

40. (Original) A process in accordance with claim 39 wherein there is employed air as a regeneration agent in said regeneration zone.

41. (Original) A process in accordance with claim 34 wherein said desulfurized sorbent is subjected to reduction with hydrogen in said activation zone, said activation zone being

maintained at a temperature in the range of from about 100°F to about 1500°F and a pressure in the range of from about 15 to about 1500 psia.

42. (Original) A process in accordance with claim 34 wherein the separated sulfurized sorbent is stripped prior to introduction to said regeneration zone.

43. (Original) A process in accordance with claim 34 wherein said desulfurized sorbent is stripped prior to introduction into said activation zone.

44. (Original) A process in accordance with claim 34 wherein said reduced-valence noble metal has a valence of less than 2.

45. (Original) A process in accordance with claim 34 wherein said reduced-valence noble metal has a valence of zero.

46. (Original) A process in accordance with claim 45 wherein said reduced-valence noble metal compound comprises platinum.

47. (Original) A process in accordance with claim 34 wherein said hydrocarbon-containing fluid stream is cracked-gasoline.

48. (Original) A process in accordance with claim 34 wherein said hydrocarbon-containing fluid stream is diesel.

49. (Original) The product produced by the process of claim 47.

50. (Original) The product produced by the process of claim 48.

51. (Original) A sorbent composition suitable for removing sulfur from a hydrocarbon-containing fluid, said sorbent composition comprising:

a reduced-valence noble metal;

zinc oxide; and

a carrier;

wherein said reduced-valence noble metal is present in the range of from about 1.01 to about 25 weight percent.

REMARKS

Claims 1-16 and 32-51 are presently pending in the application. Claims 32 and 33 have been added with this amendment, based on a telephonic interview with Examiner James Alexander about the parent case, Ser. No. 09/976,195, on June 17, 2004. The Examiner stated that only claims 16-31, of the parent application were allowable. Thus, claims 32 and 33

need to be retained in this continuation application.

The presently pending claims appear allowable over the prior art in the recitation of a sorbent composition comprising a reduced-valence noble metal, zinc oxide and a carrier, and using these sorbent compositions to remove sulfur from hydrocarbon-containing streams.

During prosecution of the parent application, the Examiner directed the Applicant to the Abstract and column 2, lines 27-34 of Kinoshita et al. (U.S. 6,068,824) to show that Kinoshita uses zinc oxide, a carrier, and a reduced-valence noble metal. Applicant's reading of the Abstract and column 2, lines 27-34 is that Kinoshita teaches an adsorbent for nitrogen oxides that comprise at least one noble metal and the oxide of at least one heavy metal. Kinoshita also teaches a method for removal of nitrogen oxides. Kinoshita does not disclose or suggest a reduced valence noble metal useful for removal of sulfur from hydrocarbon streams. In fact, sulfur is not even disclosed or suggested by Kinoshita. Additionally, Applicant respectfully suggests that Kinoshita does not disclose, or even suggest, a reduced-valence noble metal. Further, a reduction step in the preparation of the Kinoshita adsorbent is not disclosed or suggested. Further, claim 51 particularly points out and

distinctly claims the invention, wherein the reduced-valence noble metal is present in an amount within a range of from about 0.01 to about 25 weight percent.

In addition, the Examiner of the parent application broadly argues that everything lacking in Kinoshita would have been obvious to one of ordinary skill in the art. However, the Examiner does not provide any additional support as to how or why what is lacking in Kinoshita would be obvious to one of ordinary skill in the art. Applicant respectfully suggests that modifications to Kinoshita are not obvious to one of ordinary skill in the art because Kinoshita is directed only to adsorbents for nitrogen oxides and removal of nitrogen oxides. Kinoshita does not disclose or suggest, as disclosed in the presently pending application, that the Kinoshita sorbent is useful for sulfur removal. Further, as stated previously, Kinoshita does not disclose or suggest a reduced-valence noble metal sorbent useful for sulfur removal from hydrocarbon streams, that can be regenerated.

In view of the foregoing remarks, consideration and allowance of claims 1-16 and 34-51 are respectfully requested.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandra, VA 22313-1450, on

JUN 18 2004
(Date)

Lynda S. Jolly